

Standard Form

$$y = ax^2 + bx + c$$

Easy to find y-int. (0, c)

AOC: $x = -\frac{b}{2a}$ (x-value of vertex)

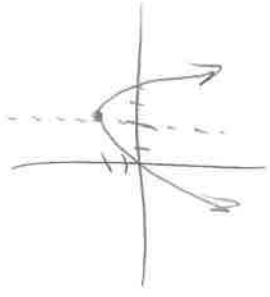
* Plug in AOS into equation to find y-value of vertex

* Can Factor to find x-int.

#4) $y = -\frac{1}{2}x^2 + 2x$ $c=0$

AOS $x = -\frac{b}{2a} = -\frac{2}{2(-\frac{1}{2})} = -\frac{2}{-1} = 2$

$y = 2$
Vertex (2, 2)



Vertex Form

$$y = a(x-h)^2 + k$$

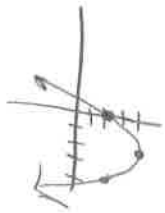
Easy to find: vertex (h, k)

* Remember h is opposite

To find y-intercept: plug "0" in for x

#10) $y = \frac{1}{2}(x+2)^2 - 4$
vertex (-2, -4)

$y = \frac{1}{2}(0+2)^2 - 4 = -2$
y-int = (0, -2)



Transformations:

$a >$ opens up / opens down (+) (-) (reflected)

$a = 1$ → Normal

$a >$ → Stretch (Narrow)

$0 < a < 1$ → Compression (Wide)

h → left or right (opposite)

k → up or down

Intercept Form

$$y = a(x-p)(x-q)$$

Easy to find: x-intercepts (zeros, roots solutions)

(p, 0) (q, 0)

AOS: $x = \frac{p+q}{2}$

plug AOS in for x to find y-value of the vertex

#11) $y = -(x+1)(x-5)$
x-int: (-1, 0) (5, 0)

AOS: $x = \frac{-1+5}{2} = \frac{4}{2} = 2$

$y = -(2+1)(2-5)$

$y = -(-3)(-3)$

$y = 9$ vertex (2, 9)

